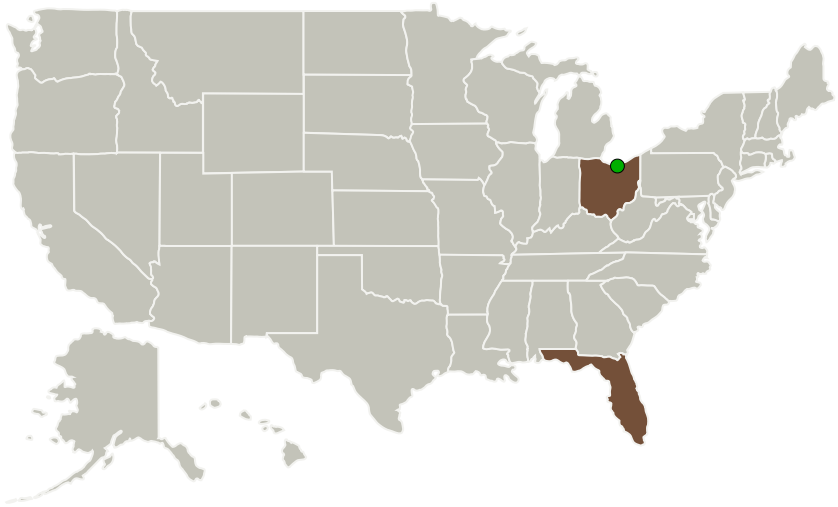
Advanced Technology MEMS-based Acoustic Array, Phase I

Completed Technology Project (2014 - 2014)

Project Introduction

The Interdisciplinary Consulting Corporation proposes a technological advancement of current state-of-the-art acoustic energy harvester for harsh environment applications. Due to the advancement of propulsion systems and increasing power requirements, the development of a renewable energy source is ideal to overcome the related issues seen in systems powered by batteries (limited lifespan, recharge issues, accessibility and replacement). We propose the innovation of a mesoscale, acoustic energy harvester with a Helmholtz resonator and a piezoelectric composite backplate using high temperature materials. Additionally, a high temperature power rectifying circuitry will be developed to convert the output of the time-varying output of the energy harvester into a useable form. The target application is to power feedback or embedded sensor systems to enable self-sustaining functionality to the devices.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Interdisciplinary Consulting Corporation	Lead Organization	Industry	Gainesville, Florida
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Advanced Technology MEMS-based Acoustic Array Project Image

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Primary U.S. Work Locations	
Florida	Ohio

Project Transitions

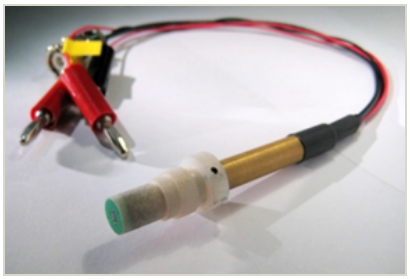
June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137589)*

Images



Project Image
Advanced Technology MEMS-based Acoustic Array Project Image *(https://techport.nasa.gov/image/127010)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Interdisciplinary Consulting Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

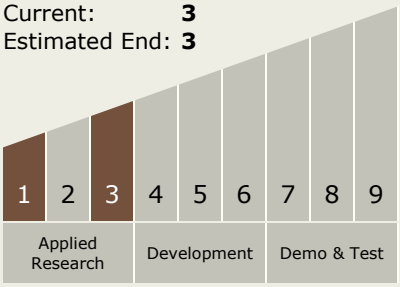
Carlos Torrez

Principal Investigator:

Stephen B Horowitz

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.6 Materials for Electrical Power Generation, Energy Storage, Power Distribution and Electrical Machines

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System